

## **APPENDIX F**

### **MAJOR EQUIPMENT LIST**

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## F.1 INTRODUCTION

The following equipment descriptions are based on conceptual design and are representative of the proposed scope.

## F.2 COMBUSTION TURBINE GENERATOR (CTG)

Quantity	Capacity	Description
1	100%	Advanced technology combustion (gas) turbine generator, suitable for firing natural gas, nominally rated at 172 MW at 650 °F and 55 percent relative humidity (RH) ambient conditions with evaporative cooling. A dry-low NO <sub>x</sub> combustor is used to control NO <sub>x</sub> .
1	100%	Evaporative cooler.
1	100%	Closed-cooling-water-to-air heat exchanger (fin-fan cooler).
1	100%	TEWAC or hydrogen cooled generator.
1	100%	Compressor water wash system (on/off-line).
1	100%	Acoustical enclosure.
1	100%	CO <sub>2</sub> or FM-200 fire protection system.

## F.3 HEAT RECOVER STEAM GENERATOR (HRSG)

Quantity	Capacity	Description
1	100%	HRSG, dual-pressure, unfired, reheated with horizontal gas flow and vertical fm tubes.
1	100%	SCR system catalyst.
1	100%	Ammonia Storage Tank and transfer skid.
1	100%	Ammonia vaporizer and injection skid.
1	100%	HRSG inlet/outlet ducts and exhaust stack.
1	100%	OPTION: Package Boiler.

**F.4 STEAM TURBINE GENERATOR (STG)**

Quantity	Capacity	Description
1	100%	Condensing-extraction type reheat steam turbine generator nominally rated at 150 MW. The STG has the following accessories: Lube oil system. Hydraulic oil system. Steam seal and exhaust system. Turbine control system. Turning gear. TEWAC or hydrogen cooling system. Seal oil system. Steam stop/control valves.

**F.5 FEEDWATER SYSTEM**

Quantity	Capacity	Description
2	100%	HP/IP HRSG feed pumps HP rated flow – 1,950 gpm. IP rated flow – 1,800 gpm.

**F.6 HEAT REJECTION SYSTEM**

Quantity	Capacity	Description
1	100%	Steam condenser with vacuum deaeration.
2	100%	Condensate pump.
1	100%	Evaporative cooling tower – six Cell with drift control.
3	33%	Circulating water pump - 38,000 gpm.
2	100%	Condenser mechanical vacuum pumps.

**F.7 COMPRESSED AIR SYSTEM**

Quantity	Capacity	Description
2	100%	Air compressors, air-cooled.
1	100%	Air receiver tank.
2	100%	Air dryers.

**F.8 WATER TREATMENT SYSTEM**

Quantity	Capacity	Description
1	100%	Demineralized water tank - 180,000 gal.
1	100%	Rented demineralizer, trailer mounted, regenerated off site.
1 Lot	100%	Oil/water separator. Chemical storage vessels, injection packages for treatment of circulating water and feedwater.
1	100%	Wastewater Dechlorination Facility. Including chemical storage tanks, containment, pumps, piping and controls.

**F.9 FUEL SYSTEM**

Quantity	Capacity	Description
1	100%	Metering station, Magnolia Power Project.
1	100%	Metering station, Existing Olive & Magnolia Units.
2	100%	Fuel gas compressor.
1	100%	Fuel gas scrubber/filter.

**F.10 ELECTRICAL EQUIPMENT (A)**

Quantity	Capacity	Description
1 Lot	100%	High voltage switchyard breakers.
2	100%	Generator step-up (GSU) transformers. FOA, 69 kV - 18 kV.
2	100%	GSU transformer circuit breakers, 72 kV.
1 Lot	100%	Electrical equipment including 4.16 kV switchgear, 480 V load centers and MCCs.

### MAJOR EQUIPMENT LIST

Quantity	Description	Size/Capacity <sup>1</sup>	Remarks
1	Combustion turbine	172 MW	Dry low NO <sub>x</sub> combustion control
1	Steam turbine	150 MW	Condensing reheat type
2	Generator	CTG, 200 MVA STG, 180 MVA	TEWAC or hydrogen cooling system
1	CT inlet filter	640,000 CFM	
1	Inlet air cooling		Evaporative
1	Fuel gas filter--separator	78,300 lb/h	
1	Heat recovery steam generator (HRSG) with supplementary duct firing	813,000 lb/h 81,700 lb/h	HP steam IP steam
1	HRSG stack		18'-6" dia. x 150' high
1	CO catalyst		Sized to achieve BACT/LAER
1	Selective catalytic reduction system, SCR		Sized to achieve BACT/LAER
2	HP/IP HRSG feedwater pumps	1,950 gpm / 1,800 gpm	HP with interstage bleed
2	Demineralized water pumps	500 gpm	
1	Demineralized water tank	180,000 gal	
1	Condensate storage tank	180,000 gal	
1	Steam surface condenser	829.8 mm Btu/h	
2	Condensate pumps	2,000 gpm	
3	Circulating water pumps	38,000 gpm	
1	Wet cooling tower	829.8 mm Btu/h	Six cells
1	Oily water separator		
2	Step-up transformers	18/69 kV	To Olive switchyard and grid
1	OPTION: Package Boiler	20,000 lb/hr	

<sup>1</sup> Size/capacity is for each piece of equipment.

SIGNIFICANT STRUCTURES AND EQUIPMENT<sup>1</sup>

Quantity	Description	Dimension (ft)		
		Length	Width	Height
1	Combustion gas turbine generator with starter package (CT)	100	45	20
1	CT air inlet filter with air cooling	100	20	85
1	Steam turbine generator	55	20	15
1	Condenser	40	35	30
1	Fuel gas filter - separator	10	10	40
1	Heat recovery steam generator (HRSG)	130	45	83
1	HRSG stack	--	18.5 dia.	150
1	SCR system	15	30	83
1	Wet cooling tower, six cells	300	50	40
1	Demineralized Water Storage Tank	--	40 dia.	20
1	Condensate Storage Tank	--	40 dia.	20
1	Administration/control building	110	65	43
1	Steam turbine generator building	110	160	72
1	Cooling tower electrical building	20	36	12
1	Dechlorination Facility (existing location and equipment)	30	20	12

<sup>1</sup> Rooms are located within the administration building.